Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A cathode composition for a lithium-ion battery having the formula $Li[M^1_{(1-x)}Mn_x]O_2$ where ~~0‹ x ‹1~~ (a) $0 < x < 0.5$ or (b) $0.5 < x < 1$, and M^1 represents one or more metal elements, with the proviso that M^1 is a metal element other than chromium, and when M^1 includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said composition characterized as being in the form of a single phase having an O3 crystal structure that does not undergo a phase transformation to a spinel crystal structure when incorporated in a lithium-ion battery and cycled for 100 full charge-discharge cycles at 30°C and a final capacity of 130 mAh/g using a discharge current of 30 mA/g.

2. (original) A cathode composition according to claim 1 wherein M^1 is selected from the group consisting of Ni, Co, Fe, Cu, Li, Zn, V, and combinations thereof.

3. (currently amended) A cathode composition according to claim 1 wherein $x = (2-y)/3$ and $M^1_{(1-x)}$ has the formula $Li_{(1-2y)/3}M^2_y$, where $0<y<0.5$ and M^2 represents one or more metal elements, with the proviso that M^2 is a metal element other than chromium, and when M^2 includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said cathode composition having the formula $Li[Li_{(1-2y)/3}M^2_yMn_{(2-y)/3}]O_2$.

4. (original) A cathode composition according to claim 3 wherein $0.083<y<0.5$.

5. (original) A cathode composition according to claim 3 wherein $0.167<y<0.5$.

6. (original) A cathode composition according to claim 3 wherein M^2 is a single metal element.

7. (original) A cathode composition according to claim 6 wherein M^2 is Ni.

8. (currently amended) A cathode composition according to claim 1 wherein x = (2-2y)/3 and $M^1_{(1-x)}$ has the formula $Li_{(1-y)/3}M^3_y$, where $0<y<0.5$ and M^3 represents one or more metal elements, with the proviso that M^3 is a metal element other than chromium, and when M^3 includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said cathode composition having the formula $Li[Li_{(1-y)/3}M^3_yMn_{(2-2y)/3}]O_2$.

9. (original) A cathode composition according to claim 8 wherein $0.083<y<0.5$.

10. (original) A cathode composition according to claim 8 wherein $0.167<y<0.5$.

11. (original) A cathode composition according to claim 8 wherein M^3 is a single metal element.

12. (original) A cathode composition according to claim 11 wherein M^3 is Co.

13. (currently amended) A cathode composition according to claim 1 wherein x = y and $M^1_{(1-x)}$ has the formula $M^4_yM^5_{1-2y}$, where $0<y<0.5$, M^4 is a metal element other than chromium, and M^5 is a metal element other than chromium that is different from M^4, and when M^4, M^5, or both includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said cathode composition having the formula $Li[M^4_yM^5_{1-2y}Mn_y]O_2$.

14. (original) A cathode composition according to claim 13 wherein $0.083<y<0.5$.

15. (original) A cathode composition according to claim 13 wherein $0.167<y<0.5$.

16. (original) A cathode composition according to claim 13 wherein M^4 is Ni.

17. (original) A cathode composition according to claim 13 wherein M^5 is Co.

18. (original) A cathode composition according to claim 13 wherein M^4 is Ni and M^5 is Co.

19. (currently amended) A lithium-ion battery comprising:

(a) an anode;

(b) a cathode according to claims 1, 3, 8, or 13; and

(c) an electrolyte separating said anode and said cathode.~~,~~

~~said cathode comprising a composition having the formula $Li[M^{+}_{(1-x)}Mn_x]O_2$ where $0<x<1$ and M^{+} represents one or more metal elements, with the proviso that M^{+} is a metal element other than chromium,~~

~~said composition characterized as being in the form of a single phase having an O3 crystal structure that does not undergo a phase transformation to a spinel crystal structure when said lithium-ion battery is cycled for 100 full charge-discharge cycles at 30°C and a final capacity of 130 mAh/g using a discharge current of 30 mA/g.~~